

CLAIMS

What is claimed is:

1. An organic electroluminescent display device comprising:
a substrate;
a lower electrode formed on the substrate, the lower electrode having an upper surface at a first step difference above the substrate;
a pixel define layer formed on the substrate and covering one portion of the lower electrode while exposing another portion of the lower electrode, the pixel define layer having an upper surface at a second step difference above the substrate;
an organic thin film layer formed on the lower electrode; and
an upper electrode formed on the organic thin film layer,
wherein the second step difference of the pixel define layer is less than or substantially equal to the first step difference of the lower electrode.
2. The organic electroluminescent display device according to claim 1, wherein the pixel dividing layer comprises a thermosetting resin or a photosensitive resin.
3. The organic electroluminescent display device according to claim 1, further comprising a buffer pattern between the lower electrode and the substrate and which has a predetermined thickness sufficient to reduce a difference between the first and second step differences.
4. The organic electroluminescent display device according to claim 3, wherein a thickness of the pixel define layer above the substrate is substantially the same as or less than a sum of thicknesses of the lower electrode and the buffer pattern above the substrate.
5. The organic electroluminescent display device according to claim 3, wherein the buffer pattern includes an inorganic insulation film comprising an oxide film or a nitride film.
6. The organic electroluminescent display device according to claim 3, wherein the buffer pattern comprises an organic insulation film comprising a thermosetting resin or a photosensitive resin.

7. The organic electroluminescent display device according to claim 1, wherein the lower electrode comprises a reflective electrode material, a transmittive electrode material, or a stacked layer of the reflective electrode material and the transmittive electrode material.

8. The organic electroluminescent display device according to claim 7, wherein the lower electrode comprises the reflective electrode material selected from the group consisting of Al, Al/ITO, Cr, Pt, Au, Ag, Ag/ITO, Al/IZO, Ag/IZO, Pd, Ni and an alloy film thereof.

9. The organic electroluminescent display device according to claim 7, wherein the lower electrode comprises the transmittive electrode material selected from the group consisting ITO, IZO and ATO.

10. An organic electroluminescent display device comprising:
a substrate comprising a plurality of pixel regions;
lower electrodes formed in the corresponding pixel regions, and having upper surfaces;
buffer patterns formed between the substrate and the corresponding lower electrodes;
pixel define layers disposed between adjacent pairs of the lower electrodes and having upper surfaces;
organic thin film layers formed on the corresponding lower electrodes; and
an upper electrode formed on the pixel define layer and the organic thin film layers.

11. The organic electroluminescent display according to claim 10, wherein the upper surface of each of the pixel define layers is substantially coplanar with or lower than the upper surfaces of the corresponding adjacent lower electrodes due to the corresponding buffer pattern.

12. The organic electroluminescent display device according to claim 10, wherein each buffer pattern smoothes a difference in step differences between adjacent pairs of the lower electrode and the step difference of the corresponding pixel define layer and has a thickness which is determined according to thicknesses of the lower electrode and the pixel define layer.

13. The organic electroluminescent display device according to claim 10, wherein each buffer pattern includes an organic insulation film or an inorganic insulation film.

14. The organic electroluminescent display device according to claim 10, wherein each pixel define layer comprises a thermosetting resin or a photosensitive resin.

15. The organic electroluminescent display device according to claim 10, wherein each lower electrode includes an electrode material including one of a reflective electrode material and a transmittive electrode material, the reflective electrode material is selected from the group consisting of Al, Al/ITO, Cr, Pt, Au, Ag, Ag/ITO, Al/IZO, Ag/IZO, Pd, Ni and alloy film thereof, and the transmittive electrode material is selected from the group consisting of ITO, IZO and ATO.

16. A fabrication method of an organic electroluminescent display device comprising:
forming a buffer pattern on a substrate for smoothing a step difference;
forming a lower electrode on the buffer pattern;
forming a pixel define layer on the substrate to expose a portion of the pixel electrode;
forming an organic thin film layer on the lower electrode; and
forming an upper electrode on the organic thin film layer,
wherein an upper surface of the pixel define layer is substantially coplanar with or lower than that an upper surface of the lower electrode due to the buffer pattern smoothing a step difference between the lower electrode and the pixel define layer.

17. The fabrication method according to claim 16, wherein the buffer pattern includes an inorganic insulation film comprising an oxide film or a nitride film.

18. The fabrication method according to claim 16, wherein the forming the buffer pattern or the forming the pixel define layer comprises depositing a thermosetting resin on the substrate and dry etching the thermosetting resin using a photoresist film.

19. The fabrication method according to claim 16, wherein the forming the buffer pattern or the forming the pixel define layer comprises depositing a photosensitive resin on the substrate and patterning the photosensitive resin through an exposure and developing process.

20. The fabrication method according to claim 16, wherein the forming the organic thin film layer comprises using a laser induced thermal imaging method or an inkjet printing method.

21. The fabrication method according to claim 16, wherein a thickness of the pixel define layer is substantially the same as or less than a sum of thicknesses of the buffer pattern and the lower electrode.

22. An organic electroluminescent display, comprising:
a substrate;
a first electrode formed to a first height above the substrate;
a pixel define layer formed to a second height above the substrate so to define the first electrode within a corresponding pixel without covering a portion of the first electrode;
a second electrode; and
an emitting layer disposed between the first and second electrodes,
wherein the first height is substantially the same as or greater than the second height.

23. The organic electroluminescent display of claim 22, further comprising a buffer pattern disposed between the substrate and the first electrode, wherein a combined thickness of the buffer pattern and the first electrode is substantially the same as or greater than a thickness of pixel define layer.